

Study on milling periods on the iron mill scale particle size and properties

Abstract

The relations between the milling periods with the iron mill scale particle size have been studied. Iron mill scale has been chosen for this research due to the nature of itself, as a by-product. From this research, the average optimum size for the final iron mill scale particle size intended to produce is at 300 μ m. Raw iron mill scale received from the industries was in the form of chip with the average size of 10 mm across and 1.5 mm thickness. Three different samples from three different steel mill companies have been used for this study. Rolling ball mill has been used to mill the iron mill scale with two different milling periods, which were two hours and six hours. After the milling process, the iron mill scale was sieved using sieving machine to a few specified grating sizes. Weight of each sample collected from each grating size was calculated in order to get the percentage of the particle size distribution of the iron mill scale after the milling process. Sample collected from Steel Mill 1 (SM1) and Steel Mill 3 (SM3) showing finer particle size produced after the milling period of six hours as compared to two hours. However sample from Steel Mill 2 (SM2) showing different trend of particle size collected as compared to SM1 and SM3. Coarser particle size was collected after the milling periods of six hours as compared to two hours. Characterization process have been conducted to all mill scale samples from each steel mill company in order to determine the relationship between the mill scale properties and the result gathered after the milling process.